

Paleoparasitology Newsletter

Nº 30 June 1980

Howard Duncan (Henry Ford Hospital, Detroit) comments:

'The 18th century anatomist, John Hunter, noting the red rings in bone and discolored bone surfaces that followed the ingestion by chicken and swine of dyes developed from the madder root -- red, alizarin -- reported this fortuitous marking. Current methods of histodynamic study on bone remodeling are dependent exactly upon the observations of tetracycline labeling of bone.

'Tetracycline adsorbs to calcium during mineralization of new bone and is identified subsequently as a band of yellow fluorescence when viewed with ultra violet or dark blue illumination. Tetracycline is reasonably stable in bone sections, but in our laboratory, considerable fading has been observed during the 15 and 20 year storage period. The fact that any tetracycline should remain in these archaeological specimens is indeed surprising. The authors indicate that the actively forming surface at the time of tetracycline intake would acquire tetracycline as long as the blood level of tetracycline remained elevated. Recognising that the average adult's bone turnover is some 4% (with variations at different sites) and recognising that the rate of accretion of bone to a new surface is in the range of .6 to 1 micron per day, an estimate of the duration of elevated blood level (and presumably oral intake of the drug) can be identified by quantitating the width of the tetracycline banding, though with age, the definition of the edges of the band decreases. In young, growing individuals, a 40% turnover of bone would naturally show far greater numbers of sites of tetracycline labeling. If there were osteomalacia or mineralizing abnormality, tetracycline is not deposited. In chronic renal disease, osteomalacia is often present.

'It is to be remembered that not only the bones, but also the teeth, label with tetracyclines, and such markers can be identified by fluorescing the undecalcified specimens in thin section. (Decalcification of bone or tooth removes the fluorescent marker). If tetracyclines are presented to humans in the first three years of life, visible discoloration of the crown of the permanent molars occurs in 32% and hypoplasia occurs in 26% (Baker and Stanley, 1970, Med.J.Aust. 1:109).

Paleoparasitology in Brazil

Following our appeal for help in translating Portuguese, we received assistance from two members, and are now able to report on the discovery of parasites in coprolites by L.F.Ferreira, A.J.G.de Araújo and U.Confalonieri.

'Parasitological examinations were performed on coprolites collected during excavations by the Brazilian Archaeological Institute under the direction of Professors Ondemar Dias and Eliana Carvalho at Unaí in northwest Minas Gerais. The material was found in Gento II cave (MG - RP 6), 6 m underground in a calcareous bank 2.5 km long. The main room of the cave is 14 m wide, 10 m long, and 3 m high at the entrance. The cave served as both habitation and burial place. Artifacts like wooden art objects, feathers, shells and food remains such as maize and peanuts were discovered. Yellow, black and red paintings were also found on the walls. The oldest dating of the site by the Radiation Biology Laboratory, Smithsonian Institution, was $8,620 \pm 100$. Twenty two samples of dried feces, probably of human origin, were examined following rehydration by trisodium phosphate in 0.5% aqueous

solution. Helminth eggs and/or larvae were found in 7 samples from layers 10 to 65 cm deep, corresponding to a range of 500 to 3500 years B.P. These include 3 different larval forms of nematodes as well as eggs of ancylostomids and trichuris.

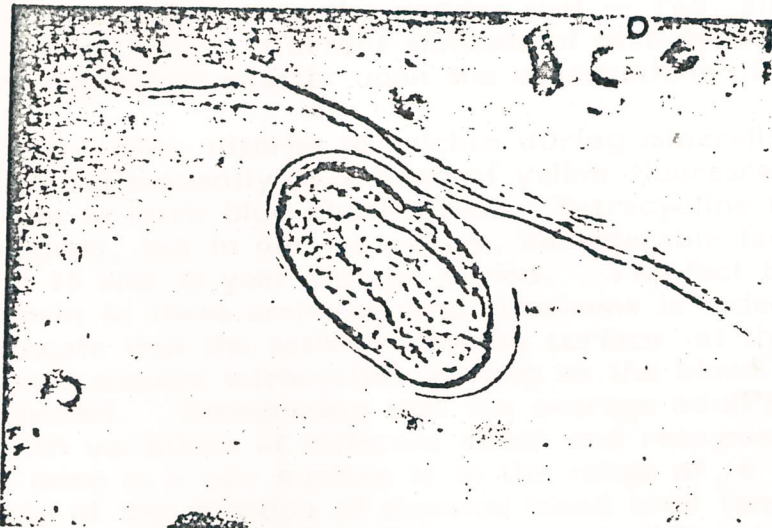


Fig.1. Ovum of Ancylostomidae

Fig.2. Larva of nematode, possibly Ancylostomidae

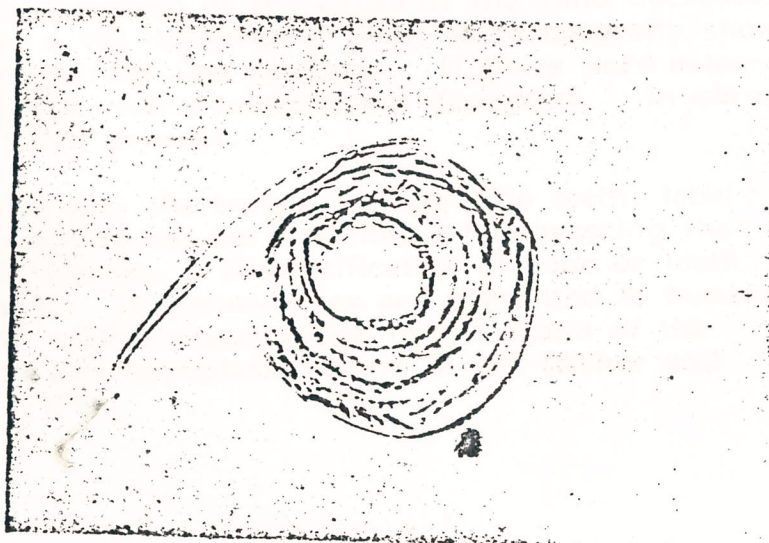


Fig.3. Ovum of Trichuris trichiura

